

Claims

- 1 1. A surface traversing apparatus, the apparatus comprising:
2 a frame;
3 a seal having a seal perimeter and mounted to the frame, the seal perimeter having at least
4 a portion adapted substantially for rolling contact with a surface to be traversed; and
5 a drive configured to move the apparatus relative to the surface.
- 1 2. The apparatus of claim 1 wherein a portion of the seal perimeter comprises at least one
2 roller.
- 1 3. The apparatus of claim 2 wherein the at least one roller comprises a compressible outer
2 surface.
- 1 4. The apparatus of claim 2 wherein the drive is adapted to power the at least one roller.
- 1 5. The apparatus of claim 1 wherein a portion of the seal perimeter comprises at least two
2 rollers.
- 1 6. The apparatus of claim 5 wherein the at least two rollers are substantially parallel and
2 disposed on opposing sides of the frame.
- 1 7. The apparatus of claim 1 wherein a portion of the seal perimeter comprises a track.
- 1 8. The apparatus of claim 7 wherein the track comprises a plurality of contiguous pads.
- 1 9. The apparatus of claim 8 wherein at least one pad comprises a flexible sealing element.
- 1 10. The apparatus of claim 8 wherein at least one pad comprises a pair of independently
2 compressible flexible sealing elements.
- 1 11. The apparatus of claim 7 wherein the drive is adapted to power the track.
- 1 12. The apparatus of claim 1 wherein a portion of the seal perimeter comprises two tracks.
- 1 13. The apparatus of claim 12 wherein the two tracks are substantially parallel and disposed
2 on opposing sides of the frame.
- 1 14. The apparatus of claim 1 further comprising means for maintaining the apparatus in
2 contact with the surface.
- 1 15. The apparatus of claim 14 wherein the maintaining means comprises a pressure
2 differential relative to a zone defined at least in part by the seal perimeter.
- 1 16. The apparatus of claim 15 wherein the pressure differential is a partial vacuum.
- 1 17. The apparatus of claim 1 further comprising a processing apparatus mounted to the frame
2 and adapted to process at least a portion of the surface.

- 1 18. The apparatus of claim 1 wherein the seal perimeter comprises a substantially closed
2 polygon.
- 1 19. The apparatus of claim 18 wherein the polygon is a quadrilateral.
- 1 20. The apparatus of claim 1 further comprising a processor for controlling the apparatus.
- 1 21. A surface traversing apparatus, the apparatus comprising:
2 a frame;
3 a locomoting seal adapted substantially for rolling contact with the surface to be traversed
4 and mounted to the frame; and
5 a drive configured to move the apparatus relative to the surface.
- 1 22. The apparatus of claim 21 wherein the locomoting seal comprises a perimeter, at least a
2 portion of which cooperates with the drive to move the apparatus relative to the surface.
- 1 23. A surface traversing apparatus, the apparatus comprising:
2 a frame;
3 a seal comprising:
4 first and second substantially parallel rollers disposed on opposing sides of
5 the frame, wherein the rollers are rotatably connected to the frame;
6 first and second tracks disposed on additional opposing sides of the frame,
7 wherein the rollers and tracks are adapted substantially for rolling contact with the
8 surface to be traversed and maintaining a seal with the surface; and
9 a drive configured to move the apparatus relative to the surface.
- 1 24. The surface traversing apparatus of claim 23, wherein at least one of the first and second
2 rollers comprises an additional track.
- 1 25. A method of traversing a surface, the method comprising the steps of:
2 providing an apparatus comprising:
3 a frame;
4 a seal having a seal perimeter and mounted to the frame, the seal perimeter
5 adapted substantially for rolling contact with the surface to be traversed; and
6 a drive configured to move the apparatus relative to the surface; and
7 traversing the surface with the apparatus.